3.3.9 Surrogate Communities

Surrogate communities are often anthropogenically created habitats that may be similar to and at least partially mimic the structure and function of natural habitats. Today's surrogate communities may be inhabited by an assemblage of species that historically used structurally similar natural communities. Some examples of surrogate communities are non-native grasslands, mines and gravel pits, bridges and buildings, dredge spoil islands, and agricultural fields. What does and does not constitute a surrogate community can be an issue of considerable debate.

Many surrogate communities have a distinct set of species that use them. For example, old mines are often used by bats, bridges are used by phoebes and cliff swallows, dredge spoil islands are used by terns and other colonial nesting birds, chimneys on houses are used by chimney swifts, and some tall buildings are used by peregrine falcons as nest sites. Other surrogate communities such as agricultural fields and non-native grasslands are used by a wider variety of species as nesting and feeding areas. Some surrogate communities are very important habitat for wildlife and should be considered for protection (e.g., old mines). Others provide important habitat for many species and changes in management can have important effects on wildlife. For example, conversion of hayfields and pastures to agricultural row crops is believed to be a contributing factor in the decline of grassland birds in the last 30 years. Some Surrogate communities are now important habitats for sustaining Wisconsin's wildlife populations and should be considered when planning the management of the wildlife in the state.

The surrogate prairie grassland community type (hereafter referred to as "surrogate grassland") has been fairly well defined and evaluated in Wisconsin through publications such as Managing Habitat for Grassland Birds: A Guide for Wisconsin (Sample and Mossman 1997). Some examples of surrogate grasslands are agricultural hayfields, small grains, pastures, fallow fields, and non-native grasslands. Surrogate grasslands currently represent the majority of grassland habitats in the state and are very important to the conservation of grassland Species of Greatest Conservation Need. Because of this, surrogate grasslands were specifically addressed as part of Wisconsin's Comprehensive Wildlife Conservation Plan. A discussion of surrogate grasslands and their relationship to Species of Greatest Conservation Need is provided in the following sections.

3.3.9.1 Surrogate Grasslands

3.3.9.1.1 Community Overview

Most of the information regarding surrogate grasslands is reproduced or adapted from "Wisconsin's Biodiversity as a Management Issue" (Addis et al. 1995) and "Managing Habitat for Grassland Birds: A Guide for Wisconsin" (Sample and Mossman 1997).

Of the 2.1 million acres in Wisconsin that were native prairie when Europeans arrived 150 years ago, less than 10,000 acres (<0.5% of the original acreage) of varying quality native prairie remains today. The midcontinental grassland biome has been greatly reduced and degraded throughout its range, generally from farming and grazing and conversion to woody vegetation with the cessation of fires, but also from urban and suburban development. Tallgrass prairie and related oak savanna are now the most diminished and threatened plant communities in the Midwest and among the most altered in the world. As a result, an estimated 15-20% of the state's original grassland flora is now considered rare. Grassland mammals and birds have fared somewhat better, using surrogate grasslands such as hayfields and pastures for their survival needs. However, with conversion from pastures and hayfields to more row crop agriculture, some grassland birds and mammals have also been dramatically declining over the last 30 years. For example, grassland birds as a group are the fastest declining bird group in the state.

Surrogate grasslands now represent the vast majority of grassland habitat in the state. Surrogate grasslands are similar in structure to the former prairies that occurred in Wisconsin. Surrogate grasslands include agricultural habitats such as hayfields, small grains (oats, wheat, and barley), row crops (corn, soybeans, and potatoes), fallow fields, old fields, pastures, and set-aside fields (e.g., CRP) planted to non-native cool-season grasses (such as smooth brome, timothy, red-top, orchard-grass, bluegrass, and quack-grass) or native warm-season grasses (such as big bluestem, little bluestem, Indiangrass, switchgrass, and sideoats grama). Examples of other surrogate prairie grasslands include young conifer plantations, orchards, parks, golf courses, airports, roadsides, cut-over or burned-over forests, and mossed bogs (bogs from which sphagnum moss has been removed commercially). Surrogate grasslands also include other idle grasslands, such as those on public or private lands managed for wildlife. Usually, idle grasslands are composed of non-native grasses and forbs, but they also can be plantings of one or several native prairie species, but fall far short of the rich species diversity of the original prairie.

Surrogate grasslands occur in every ecological landscape in Wisconsin; however the highest concentrations of surrogate grasslands are in the Western Prairie, Western Coulee and Ridges, Southwest Savanna, Central Sand Plains, Northwest Sands, and Southeast Glacial Plains Ecological Landscapes. It is estimated that roughly 3 million acres of agricultural land currently provide surrogate grassland habitat.

3.3.9.1.2 Vertebrate Species of Greatest Conservation Need Associated with Surrogate Grasslands

Twenty-six vertebrate species of greatest conservation need were identified as moderately or significantly associated with surrogate grasslands (Table 3-216).

Table 3-216. Vertebrate species of greatest conservation need that are moderately or significantly associated with surrogate grasslands.

Species Significantly Associated with Surrogate Grasslands
Birds
Northern Harrier
Greater Prairie-chicken
Northern Bobwhite
Upland Sandpiper
Barn Owl
Short-eared Owl
Loggerhead Shrike
Dickcissel
Grasshopper Sparrow
Henslow's Sparrow
Le Conte's Sparrow
Bobolink
Eastern Meadowlark
Western Meadowlark
Species Moderately Associated with Surrogate Grasslands
Birds
Blue-winged Teal
Sharp-tailed Grouse
American Golden Plover
Marbled Godwit
Buff-Breasted Sandpiper
Willow Flycatcher
Brown Thrasher
Bell's Vireo
Field Sparrow
Mammals
White-tailed Jackrabbit
Franklin's Ground Squirrel
Prairie Vole

In order to provide a framework for decision-makers to set priorities for conservation actions, the species identified in Table 3-216 were subjected to further analysis. The additional analysis identified the best opportunities, by Ecological Landscape, for protection, restoration, and/or management of both surrogate grasslands and associated vertebrate species of greatest conservation need. The steps of this analysis were:

- Each species was examined relative to its probability of occurrence in each of the 16 Ecological Landscapes in Wisconsin. This information was then cross-referenced with the opportunity for protection, restoration, and/or management of surrogate grasslands in each of the Ecological Landscapes (Tables 3-217 and 3-218).

- Using the analysis described above, a species was further selected if it had both a significant association with surrogate grasslands and a high probability of occurring in an Ecological Landscape(s) that represents a major opportunity for protection, restoration and/or management of surrogate grasslands. These species are shown in Figure 3-54.

Table 3-217. Vertebrate species of greatest conservation need that are *significantly* associated with surrogate grassland communities and their association with Ecological Landscapes that support surrogate grasslands.

Surrogate Prairie Grasslands	Birds (14)*													
Ecological Landscape grouped by opportunity for management, protection, and/or restoration of this community type	Northern Harrier	Greater Prairie-Chicken	Northern Bobwhite	Upland Sandpiper	Barn Owl	Short-eared Owl	Loggerhead Shrike	Dickcissel	Grasshopper Sparrow	Henslow's Sparrow	Le Conte's Sparrow	Bobolink	Eastern Meadowlark	Western Meadowlark
MAJOR														
Central Sand Plains	H	H		H		H		H	H	H	M	H	H	H
Northwest Sands	H			H					M		H	H	M	
Southeast Glacial Plains	H		M	M		H	M	H	H	H		H	H	H
Southwest Savanna	M		H	H		H	M	H	H	H		H	H	H
Western Coulee and Ridges	H		H	M		M		H	H	H		H	H	H
Western Prairie	H			M		M	H	H	H	H	M	H	H	H
IMPORTANT														
Central Lake Michigan Coastal	H			H		M	M	H	M	M		H	H	M
Central Sand Hills	H		H	M		M		H	H	H	M	H	H	H
Southern Lake Michigan Coastal	M					M		H	M	H		H	H	
PRESENT (MINOR)														
Forest Transition	H	H		M				M	M	M	M	H	H	M
North Central Forest	H											M		
Northeast Sands	M			M					H			H		
Northern Lake Michigan Coastal	H			H			M	M	M	M		H	H	M
Northwest Lowlands	H										H	M		
Superior Coastal Plain	H			H							H	H	H	

Color Key

H = HIGH probability the species occurs in this Ecological Landscape

M = MODERATE probability the species occurs in this Ecological Landscape

= LOW or NO probability the species occurs in this Ecological Landscape

*** The number shown in parentheses is the number of Species of Greatest Conservation Need from a particular taxa group that are included in the table. Taxa groups that are not shown did not have any Species of Greatest Conservation Need that met the criteria necessary for inclusion in this table.**

Table 3-218. Vertebrate species of greatest conservation need that are *moderately* associated with surrogate grassland communities and their association with Ecological Landscapes that support surrogate grasslands.

Surrogate Prairie Grasslands	Birds (9)*									Mammals (3)		
Ecological Landscape grouped by opportunity for management, protection, and/or restoration of this community type	Blue-winged Teal	Sharp-tailed Grouse	American Golden Plover	Marbled Godwit	Buff-breasted Sandpiper	Willow Flycatcher	Brown Thrasher	Bell's Vireo	Field Sparrow	White-tailed Jackrabbit	Franklin's Ground Squirrel	Prairie Vole
MAJOR												
Central Sand Plains	H	M	M			H	H		H	M	H	M
Northwest Sands	H	H	M	M			H		H		H	
Southeast Glacial Plains	H		H	M	H	H	H	M	H		H	M
Southwest Savanna	M		M		M	H	H	H	H		M	M
Western Coulee and Ridges	H		M		M	H	H	H	H		M	M
Western Prairie	H		M	H	M	H	H		H	M	M	M
IMPORTANT												
Central Lake Michigan Coastal	H		M	M	M	H	H		H			
Central Sand Hills	H		M			H	H		H		H	M
Southern Lake Michigan Coastal	M			M	H	H	H	M	H		H	M
PRESENT (MINOR)												
Forest Transition	H		H		M		H		H		M	
North Central Forest		M					M					
Northeast Sands		M					H		H			
Northern Lake Michigan Coastal	H		H	M	M	H	H		H			
Northwest Lowlands	M						H					
Superior Coastal Plain	H	M	H	H	H		H				H	

Color Key

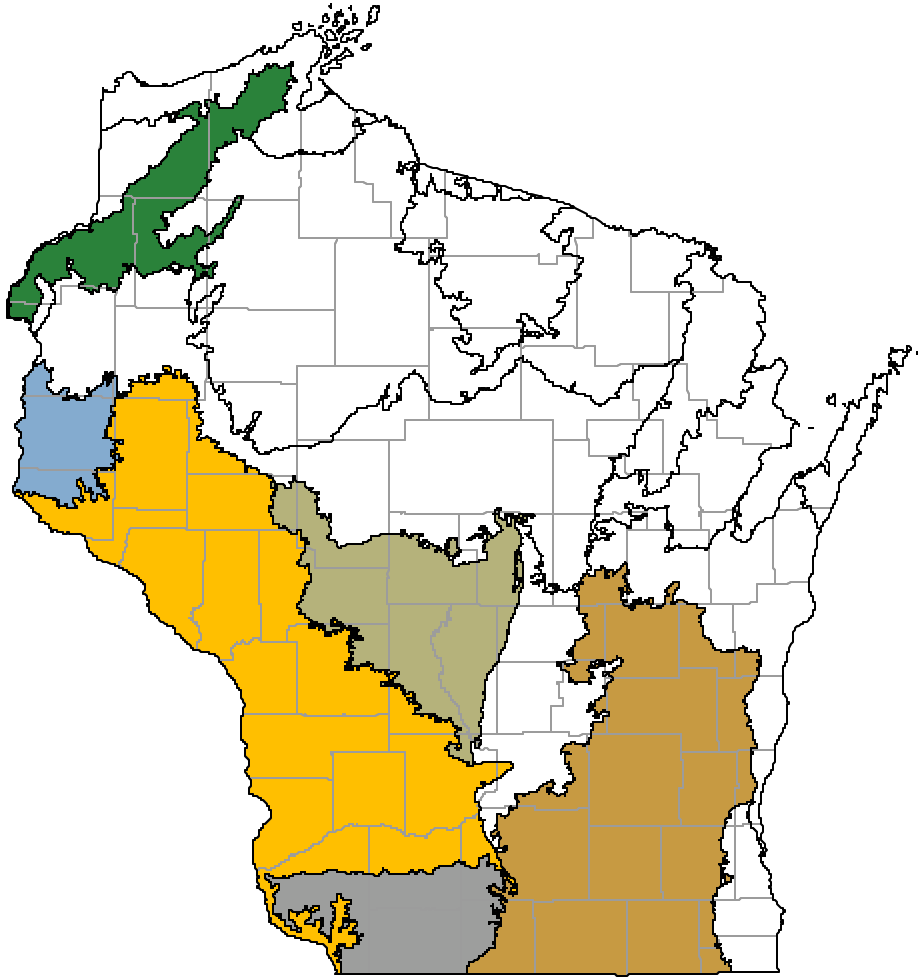
H = HIGH probability the species occurs in this Ecological Landscape

M = MODERATE probability the species occurs in this Ecological Landscape

= LOW or NO probability the species occurs in this Ecological Landscape

*** The number shown in parentheses is the number of Species of Greatest Conservation Need from a particular taxa group that are included in the table. Taxa groups that are not shown did not have any Species of Greatest Conservation Need that met the criteria necessary for inclusion in this table.**

Figure 3-54. Vertebrate species of greatest conservation need that have ***both* a significant association with surrogate grasslands ***and*** a high probability of occurring in an Ecological Landscape(s) that represents a major opportunity for protection, restoration and/or management of surrogate grasslands.**



Central Sand Plains
Northern Harrier
Greater Prairie-Chicken
Upland Sandpiper
Short-eared Owl
Dickcissel
Grasshopper Sparrow
Henslow's Sparrow
Bobolink
Eastern Meadowlark
Western Meadowlark

Northwest Sands
Northern Harrier
Upland Sandpiper
Le Conte's Sparrow
Bobolink

Southeast Glacial Plains
Northern Harrier
Short-eared Owl
Dickcissel
Grasshopper Sparrow
Henslow's Sparrow
Bobolink
Eastern Meadowlark
Western Meadowlark

Southwest Savanna
Northern Bobwhite
Upland Sandpiper
Short-eared Owl
Dickcissel
Grasshopper Sparrow
Henslow's Sparrow
Bobolink
Eastern Meadowlark
Western Meadowlark

Western Coulees and Ridges
Northern Harrier
Northern Bobwhite
Dickcissel
Grasshopper Sparrow
Henslow's Sparrow
Bobolink
Eastern Meadowlark
Western Meadowlark

Western Prairie
Northern Harrier
Loggerhead Shrike
Dickcissel
Grasshopper Sparrow
Henslow's Sparrow
Bobolink
Eastern Meadowlark
Western Meadowlark

3.3.9.1.3 Threats and Priority Conservation Actions for Surrogate Grasslands

Threats & Issues

- Changing agricultural practices (e.g., increased use of pesticides; extensive conversion of small grain and pasture acreage to row crops; elimination of grassy fence rows, field edges, and corners; and changes in the nature and timing of agricultural disturbances, especially early and frequent mowing of alfalfa during the nesting season).
- Changing land use patterns, including urban development and rural home building, which are often focused on the least productive agricultural lands that have the highest portion of set-aside lands. Rural development often results in fragmenting grassland habitat, restricts burning to maintain grasslands, introduces pets that can adversely impact wildlife, and introduces invasive plants. Habitat fragmentation results in patch isolation and the creation of edge effects. This is especially harmful to vertebrate animals, including area sensitive grassland birds.
- Increased fire control and lack of acceptance of the use of prescribed fire to maintain grasslands have resulted in grasslands converting into brush or woodlands.
- Conflicting forest (tree planting) and grassland management practices in former prairie areas of the state have resulted in conversion of grassland to trees, fragmenting grassland habitats.
- General lack of attention to or appreciation of grassland communities by the public.

Priority Conservation Actions

- Promote, when feasible, agricultural practices that are compatible with grassland management, such as rotational grazing operations, greater use of small grain and hay crops, and later harvesting of grass hay.
- Investigate new sustainable agricultural practices that are economically viable for farmers and compatible with sustaining grassland species such as using prairie grasses as biofuel or other products (e.g., particle board, or other cellulose-based products), especially on marginal agricultural land.
- Work at the local, state and federal level to promote decisions and actions that benefit grasslands and the wildlife that utilize grassland communities.
- Encourgae landowner enrollment in federal set aside programs that protect and restore grasslands. These programs include the Conservation Reserve Program (CRP), Conservation Reserve Enhancement Program (CREP), Wildlife Habitat Incentives Program (WHIP), Environmental Quality Incentives Program (EQIP), Grasslands Reserve Program (GRP), and Wetland Reserve Program (WRP). All of these programs are part of the US Department of Agriculture, Natural Resources Conservation Service and Farm Services Agency. These valuable programs should strive to plant a diverse mix of grasses and forbs (both tallgrass and short grass species) that benefit a large number of grassland wildlife; focus CRP in some former prairie areas to create a grassland landscape; and increase the buffer width of grasslands used to protect water quality in the CREP Programs.
- Use land use planning to guide urban and rural development in ways that minimize negative affects to grassland ecosystems.
- Promote management practices that control invasion of surrogate grasslands by woody vegetation, such as prescribed burning or occasional mowing.
- Promote restoration of surrogate grassland areas degraded by heavy grazing or woody growth invasion, which can often be accomplished through the use of fire, brush removal, or controlled grazing.

- Increase the effective size and function of grassland landscapes and their utility to grassland dependent species by promoting the creation/maintenance/protection of surrogate grasslands adjacent or in close proximity to other surrogate grasslands or remnant prairie and savanna habitats.
- Pursue opportunities for establishing new surrogate grassland areas on both private and public lands, especially WDNR-managed lands. In some cases establishment would require removal and control of woody growth. In others it would require the establishment of permanent grass/forb cover. Incorporation of native remnant prairies and restoration of native vegetation should be encouraged whenever possible, but the latter should not be made an absolute requirement. Most grassland restoration projects should be in former native grassland areas, which will have the soil, topography, remnant vegetation, lack of trees and brush, and climatic conditions most conducive to restoring and maintaining open grassland habitat. However, some regions of existing cleared forest or drained marsh may prove suitable as well.
- Establish surrogate grassland areas at several landscape scales, in both lowland and upland habitats, and a variety of soil and topographic types as well as geographic locations in order to be most effective at meeting area and habitat requirements for a wide variety of species.
- Encourage establishment and management of surrogate grassland habitat on private lands through tax incentives (e.g., the Minnesota Prairie Bank Program), educational programs, technical advice and assistance, and the Habitat Restoration Areas component of the Wisconsin Stewardship Program.
- Work with other programs and agencies to coordinate efforts to maintain surrogate grassland habitats. For example, coordinating with tree planting programs to avoid planting trees in surrogate grassland restoration areas.
- Promote appreciation of native grassland communities by the public, resource managers, and scientists through education and research efforts and through promotion of compatible recreational opportunities (e.g., birding, hiking, etc). In particular, build on the popularity of prairie restoration and landscaping and birding as an avenue to encourage support for efforts to conserve grassland ecosystems as a whole. Support and add to the efforts of the many existing partnerships and non-profit organizations which promote conservation of grassland, prairie, and savanna habitats. Examples of such organizations include The Nature Conservancy, The Prairie Enthusiasts, The Madison Audubon Society, Pheasants Forever, Wings over Wisconsin and many other conservation groups.